

Giving Diarrhea the Attention it Deserves

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Diarrheal disease is so common and so often short-lived, and apparently benign, that neither physicians nor parents give it the attention it deserves. Unfortunately, this lack of concern plays an important role in the high mortality rate from diarrhea among children in developing countries. It also contributes to the high numbers and costs of hospitalizations for diarrhea in the United States. An estimated 16.5 million children less than 5 years of age have between 21 and 37 million episodes of diarrhea annually. Of these, 2.1 to 3.7 million episodes lead to a physician visit, a total of 220,000 patients are hospitalized, and 325 to 425 children die.

Diarrhea is defined as an increase in frequency and water content of bowel movements. In reference to stool volume, more than 10 ml/kg/day for infants and toddlers or more than 200 ml/day for older children is an acceptable measurement index for diarrhea. The basic science terminology of diarrhea is the disturbance of water and electrolytes handling across apical and basolateral membranes of small and/or large intestine. On the intracellular level, diarrhea may be classified as osmotic or secretory. Although theoretically that distinction is possible, practical, and often the case, in any given patient, diarrhea is caused by combined osmotic and secretory mechanisms. Diarrhea is a symptom rather than a diagnosis. Based on duration of symptoms, diarrhea can be either acute, that is, less than 2 weeks, or chronic, when the patient is symptomatic for longer than 2 weeks.

As for etiology, diarrhea can be infectious versus noninfectious. Infectious etiology is when we suspect the presence of a microbial agent, whether we are able to isolate such agent or not. Usually, in nonimmunocompromised patients, infectious diarrhea is acute. There are too many causes of noninfectious diarrheal bowel movements. Although diarrhea is almost always chronic in noninfectious causes, acute intermittent presentation may be the only early red flag in a subgroup of patients. Noninfectious causes of diarrhea are congenital (e.g., congenital chloride diarrhea, congenital sodium diarrhea, microvillus inclusion disease,

tufting enteropathy, congenital disaccharidase deficiency), malabsorptive (e.g., cystic fibrosis, gluten enteropathy), inflammatory (e.g., regional ileitis, noninfectious colitis, whether ulcerative or not), or diet induced.

Effective evaluation starts with obtaining a detailed history and conducting a full physical examination. How much further the case is investigated should be based on clinical suspicions. Symptoms persisting beyond two weeks require investigation. Irritable bowel syndrome is a common cause; however, organic disease should be suspected if there is weight loss, a recent onset of diarrhea (less than three months), or nocturnal or continuous symptoms. Pale and offensive stools may suggest malabsorption. The presence of blood or mucus in stools or a family history may indicate inflammatory bowel disease. Recent hospital admission or antibiotic treatment may indicate *Clostridium difficile* infection. Signs of malnutrition or failure to thrive may indicate cystic fibrosis, celiac disease, or a chronic infection, such as a UTI. These are some of the red flags that may require a specialist referral.

Whenever possible, management should be directed to target and correct the underlying cause. General principles of management may include: 1) eliminate juices and high fructose corn syrup whether diet induced diarrhea is suspected or not; 2) maintain hydration; 3) almost all infants with acute diarrhea can tolerate breastfeeding; and 4) the use of antibiotics, probiotics and zinc supplementation should be individualized. Regardless of the cause of recurrent acute or chronic diarrhea, an early referral may correlate with better outcome.

GI for Kids, PLLC is a pediatric gastroenterology specialty clinic located at East Tennessee Children's Hospital and staffed with an expert team readily available to assist in caring for such patient by providing the next step in evaluation and management. We serve all of the East Tennessee and the surrounding areas.

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